

## REMARKS

In the Office Action mailed December 5, 2005, the Examiner rejected claims 1 and 6 under 35 U.S.C. §102(b) as anticipated by U.S. patent 4,870,697 to Weber.

The Examiner rejected claims 1-17 under 35 U.S.C. §103(a) as being obvious based upon previously cited U.S. patent 5,087,099 to Stolarczyk in view of Derwent abstract of ZA 7606990A.

Claim 18 was rejected under 35 U.S.C. §103(a) as obvious over the previously noted '099 patent to Stolarczyk in view of the patent abstract for 1978-H4760A as previously applied to claim 17, and further in view of U.S. patent 5,029,943 to Merriman.

In view of the clarifications set forth herein, it is respectfully submitted that all pending claims are presently in condition for allowance.

### **A. Rejection of Claims 1 and 6 Under 35 U.S.C. §102(b) Based Upon U.S. Patent 4,870,697 to Weber Should Be Withdrawn**

Claims 1 and 6 were rejected on grounds that:

Weber teaches a face control system with a first face sided radio transmission device (81, 51); and a second face master control sided transmission device (8,5); the radio transmission devices each having receiver and transmitter modules to carry out wireless and cable free bi-directional data transmission in the end region of the face between the first face sided radio transmission device and the second face master control sided device as called for in claim 1.

Weber also teaches the control system comprising the wireless and cable free bidirectional communication system providing radio communication between the communication device and the face master control sided radio transmission device as called for in claim 6.

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Claim 1 recites a face support control system for a self-advancing face support in underground mining with a conveyor, a mining machine, a collection of support shields each of which is associated with a control device for controlling the support shields, a communication device for interconnection of the control devices, a face master control arranged outside the face, and a communication system for transmitting data between the control devices in the face and the face master control outside the face. Claim 1 further recites that the communication system comprises a first face sided radio transmission device and a second face master control sided radio transmission device.

Claim 1 additionally recites that the radio transmission devices each have receiver and transmitter modules used to carry out wireless and cable-free bi-directional data transmission in the end region of the face.

The '697 patent to Weber fails to disclose the subject matter recited in claim 1. Specifically, the '697 patent fails to disclose a face support control system for a self-advancing face support. The face support control system recited in claim 1 is used in conjunction with a plurality of support shields. The '697 patent entirely fails to disclose these aspects. Instead, the '697 patent discloses communication systems for remote operation of a winning machine such as a shearer-loader machine.

Claim 6 recites a face support control system adapted for use in an underground mining system including a conveyor, a mining machine, a plurality of support shields, a plurality of control devices for controlling the operation of the support shields, at least one communication device in communication with at least one of the plurality of control devices, and a face master control. Claim 6 recites the face support system as comprising a wireless and cable-free bi-directional communication system providing radio communication between the at least one communication device and the face master control.

Again, the '697 patent entirely fails to disclose a face support control system for use in an underground mining system that includes a collection of support shields and a collection of control devices for controlling the operation of the support shields. The '697 patent fails to disclose the subject matter of claim 6.

The Examiner is respectfully reminded as to the standard for properly rejecting a claim under §102. "Anticipation under 35 U.S.C. §102 requires that a single prior art reference disclose each and every limitation of the claimed invention." *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.2d 1306, 66 USPQ2d 1429 (Fed. Cir. 2003). "Anticipation under Section 102 can be found only if a reference shows exactly what is claimed," *Titanium Metals Corp. v. Bonner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). The '697 patent fails to show exactly what is claimed in each of the independent claims at issue.

Furthermore, it is respectfully urged that upon closer review, it will be appreciated that the '697 patent to Weber provides a significantly different configuration than that of

claims 1 and 6. Weber discloses a remote control for operating a winning machine. Both the remote control and the winning machine comprise receiver and transmitter units. However, especially in claim 1, last paragraph (i.e. col. 4, lines 46-52), Weber discloses that the memory means used for storing instructions data shall be physically separable from the housing at a location remote to the winning machine. This means that the information which is stored in the memory means can only be transferred physically outside the face in order to read this information outside the face directly from the memory means. In Weber, there is no radio transmission between the control devices in the face and any face master control outside the face.

For at least these reasons, it is respectfully submitted that claims 1 and 6 are allowable over the '697 patent and the present rejection should be withdrawn.

**B. Rejection of Claims 1-17 Under 35 U.S.C. §103(a) Based Upon U.S. Patent 5,087,099 in View of Derwent Abstract of ZA 7606990A Should Be Withdrawn**

Claims 1-17 were rejected as follows:

Stolarczyk discloses the face control system including a first face sided radio transmission device; and a second face master control sided transmission device, the devices having receiver and transmission modules. Stolarczyk teaches some cable-free and wireless communication, but does disclose a cable (104) between the first and second device; and thus fails to meet the limitation "cable-free" in the entirety of that region.

1978-H4760A teaches a radio link between a fixed underground location and various underground areas. One of ordinary skill in the art would have known that this is advantageous because it allows for communication without string wires or cables.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Stolarczyk apparatus to have used a radio link [and therefore a cable-free transmission system] between the first and second devices as called for in claim 1, in order to eliminate the need to lay a cable.

Stolarczyk fails to explicitly disclose the transmission device on the face edge. Absent any showing of unexpected results, the precise placement of the device is deemed to be obvious to one of ordinary skill in the art.

With regards to claim 3; "the communication device in the face" is interpreted as "the first face sided radio transmission device"; which is shown by Stolarczyk; and disclosed as being on multiple shields; thus is deemed to be spaced as called for in claim 3.

Stolarczyk teaches the mining machine having a radio transmission system (e.g. 125) as called for in claim 4.

Stolarczyk teaches the control device as called for in claim 5.  
Regarding independent claim 6:

Stolarczyk teaches a face support control system comprising a communication system providing radio communication, Stolarczyk teaches some cable-free and wireless communication, but does disclose a cable (104) between the communication device and the control sided device; and thus fails to meet the limitation "cable-free" in the entirety of that region.

1978-H4760A teaches a radio link between a fixed underground location and various underground areas. One of ordinary skill in the art would have known that this is advantageous because it allows for communication without string wires or cables.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Stolarczyk apparatus to have used a radio link [and therefore a cable-free transmission system] between communication device and the control sided radio device as called for in claim 6, in order to eliminate the need to lay a cable.

Stolarczyk teaches a first radio as called for in claim 7.

Stolarczyk teaches a second radio as called for in claim 8.

Stolarczyk teaches a second communication device as called for in claim 9.

Stolarczyk teaches radio communication as called for in claim 10.

Stolarczyk teaches the radio transmission station as called for in claim 11.

Stolarczyk teaches a second communication device as called for in claim 12.

Regarding independent claim 13:

Stolarczyk teaches the mining system comprising a mining machine (e.g. 124-130, figure 4); a plurality of support shields (96); a plurality of control devices (258, see col 8, lines 23-51) for controlling the shields; at least one communication device (192) in communication with at least one of the plurality of control devices; a face master control (e.g. 220,224); and a wireless and partly-cable free radio based communication system (e.g. 236 and 248) providing radio communication between the communication device and the face master control. Stolarczyk teaches some cable-free and wireless communication, but does disclose a cable (104) between the communication device and the control sided device; and thus fails to meet the limitation "cable-free" in the entirety of that region,

1978-H4760A teaches a radio link between a fixed underground location and various underground areas. One of ordinary skill in the art would have known that this is advantageous because it allows for communication without string wires or cables.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Stolarczyk apparatus to have used a radio link [and therefore a cable-free transmission system] in place of the partly- cable-free link as called for in claim 13, in order to eliminate the need to lay a cable.

Stolarczyk teaches the radio transmission station (192—col. 7, line 24 or 125— col. 6, lines 32-44) providing communication between the mining machine and the communication device as called for in claim 14,

Stolarczyk teaches first and second communication devices as called for in claim 15.

Stolarczyk teaches the radio communication between the first and second devices as called for in claim 16.

Stolarczyk teaches the radio transmission station providing

communication between the mining machine and at least one of the first and second communication devices as called for in claim 17.

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As previously explained, the '099 patent to Stolarczyk relates to a system which transmits signals by inductive coupling of a transmitter and a receiver through a utility conductor such as a cable. See for example, the Abstract; col. 3, lines 34-37; col. 7, lines 26-36; col. 8, line 4; and col. 12, lines 23-28. The utility conductor or cable is depicted in Figure 7 as item 200. Thus, the control system of the '099 patent is not "cable-free."

Furthermore, according to column 3, beginning at line 20, of the '099 patent, the sensors which are monitored by the receivers, are used to monitor machine, geological or environmental parameters in the mining environment. Thus, according to the '099 patent, that system only provides one-way communication and not "bi-directional" communication. Further support that the '099 patent does not describe bi-directional communication is that the sensors and transmitters are controlled by a sleep-timer interface which only spontaneously and periodically activates the transmitters and initiates the transmission of multiple short duration bursts, see col. 4, line 64 to col. 5, line 22.

The Derwent abstract of ZA 7606990A fails to remedy the deficiencies of the '099 patent to Stolarczyk, and in particular, fails to teach "bi-directional" communication. The cited abstract merely refers to a radio communication link between an underground location and another underground location. The '990 abstract entirely fails to teach "bi-directional" data transmission. This is an important aspect of the claimed subject matter and any rejection, in order to be supportable must provide a prima facie teaching of not only this aspect, but of all other aspects in combination with the bi-direction communication feature recited in the claims at issue.

As reason for combining the '990 abstract with the '099 patent, it was asserted that "it would have been obvious to one of ordinary skill in the art...to have modified the Stolarczyk apparatus to have used a radio link." However, upon closer review, it will be seen that the '099 patent was a development approximately 10 years after the approach of the '990 abstract. Several examples of radio-based mining communications are

given in the Background of the Invention section in the '099 patent. It is apparent that the '099 patent is an attempt to provide a superior alternative to the known radio-based systems at that time. Thus, an artisan attempting to develop a control system as recited in the claims at issue, would not be motivated to combine the '099 patent with the '990 abstract which describes radio links.

For at least these reasons, it is respectfully submitted that the claims at issue are allowable over the cited documents, and the present rejection should be withdrawn.

**C. Rejection of Claim 18 Under 35 U.S.C. §103(a) Based Upon the '099 Patent in View of ZA 7606990A and Further in View of U.S. Patent 5,029,943 to Merriman Should Be Withdrawn**

Claim 18 was rejected for:

Stolarczyk fails to teach the transmission station (i.e. the mining machine radio) provides communication between both the first and second communication devices (e.g. two distinct shield radios) and the mining machine

Merriman teaches a radio (col. 2, line 30) transmission station for communicating between each shield radio and the mining machine. This provides the advantage of allowing the location of the mining machine to be determined (col. 2, line 14).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Stolarczyk system to have the transmission station provides communication between the first and second communication devices and the mining machine as called for in claim 18; in order to facilitate locating the mining machine along the face.

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For the previously discussed reasons, it is submitted that the '099 patent is not properly combinable with the '990 abstract. Even, for purposes of argument, if such combination were made, further combination with the '943 patent to Merriman still fails to sufficiently teach the subject matter of claim 18.

The system of the '943 patent conveys data of a shearer in one direction, i.e. from the shearer. This one way transmission of data is to only perform monitoring of the shearer. In contrast, the system as recited in claim 18 utilizes "bi-directional" communication.

Thus, it is respectfully submitted that claim 18 is allowable over the cited documents and that this rejection should be withdrawn.

**D. New Claims 19-21**

New claims 19-21 are presented. No new matter is added by these claims since support is found throughout the present application as originally filed.

It is submitted that these claims are distinguishable from, and patentable over, all of the art of record.

**E. Conclusion**

For the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 1-21) are now in condition for allowance.

Respectfully submitted,

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